

Claims

1. Composite material with a polymerisable organic binder, characterised in that it contains a filler with filler particles which have the shape of a torus.
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2. Composite material according to claim 1, characterised in that the filler contains additional fragment-shaped and/or spherical inorganic filler particles.
- 10 3. Composite material according to claim 1 or 2, characterised in that the filler additionally contains non-torus-shaped filler particles made from silicon dioxide.
- 15 4. Composite material according to claim 3, characterised in that the non-torus-shaped filler particles are produced from pyrogenic and/or precipitated silicic acids and/or silica sols and/or from a dispersion of pyrogenic and/or from precipitated silicic acids.
- 20 5. Composite material according to any of claims 1 to 4, characterised in that the torus-shaped and/or non-torus-shaped filler particles are silanized.
- 25 6. Composite material according to any of claims 1 to 5, characterised in that the organic binder includes at least one of the following materials: ethylenically unsaturated monomers and oligomers, epoxides, ormocers, ceramers, liquid crystal systems, spiro-orthoesters, oxethanes, polyurethane, polyester, A-silicon and C-silicon, polycarbonic acids.

7. Composite material according to any of claims 1 to 6, characterised in that the organic binder cures chemically and/or photochemically.
- 5 8. Composite material according to any of claims 1 to 7, characterised in that the torus-shaped filler particles have an average external diameter in the region of 0.5-100 μ m.
9. Composite material according to claim 8, characterised in that the torus-shaped filler particles have an average external diameter in the region of 10 and 50 μ m.
- 10 10. Composite material according to any of claims 1 to 9, characterised in that the torus-shaped filler particles have an internal diameter in the region of 0.2-20 μ m.
- 15 11. Composite material according to claim 10, characterised in that the torus-shaped filler particles have an internal diameter in the region of 0.4-4.0 μ m.
12. Composite material according to any of claims 1 to 11, characterised in that it contains filler 1-90 wt.% with torus-shaped filler particles.
- 20 13. Composite material according to claim 12, characterised in that it contains filler 15-70 wt.% with torus-shaped filler particles.
- 25 14. Composite material according to any of claims 1 to 13, characterised in that the filler particles contain silicon dioxide and/or heavy metal oxides with an atomic number of greater than 28.

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15. Composite material according to claim 14, characterised in that the heavy metal oxides are selected from the group of zirconium oxide, cerioxide, tin oxide, zinc oxide, yttrium oxide, strontium oxide, barium oxide, lanthanum oxide, bismuth oxide and compounds thereof.

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16. Dental composite material according to any of claims 1 to 15.

17. Use of a filled and polymerisable composite material which contains a filler with filler particles that have the shape of a torus, in particular according to any of claims 1 to 16, as a dental material.

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